

**REMARKS**

Applicants acknowledge receipt of an Office Action dated February 8, 2005. In this response, Applicants have amended claims 1, 4 and 5 and added claims 13-19. Claims 2, 3 and 8 have been incorporated into claim 1 and claims 7, 9 and 10 have been rendered redundant by the amendments to claim 1. Support for newly added claims 13-19 may be found in the specification, *inter alia*, on pages 8-13. Applicants note that these amendments amend the claims as presented in a Preliminary Amendment filed on August 4, 2003. Copies of the August 4, 2003 Preliminary Amendment as well as a copy of a Preliminary Amendment filed on December 4, 2003 are being submitted herewith. Based upon a telephone conversation between Examiner Kunemund and Mr. Paul Strain, it appears that neither of the preliminary amendments has been entered or considered in the present application.

Following entry of the foregoing amendments, claims 1, 4-6, and 9-12 are pending in the application.

Reconsideration of the present application is respectfully requested in view of the foregoing amendments and the remarks which follow.

**Acknowledgement of Formal Drawings**

During a review of their file, Applicants have noted that the PTO has not yet acknowledged acceptance of the formal drawings submitted on August 4, 2003. Applicants respectfully request that the PTO acknowledge acceptance of the drawings in its next communication.

**Objections to Claim**

On page 2 of the Office Action, the PTO has rejected claim 6 as being of improper multiple dependent form.

As discussed above, it appears that preliminary amendments filed on August 8, 2003 and December 4, 2003 have not yet been entered in the PTO file. Applicants are submitting herewith copies of the previously filed preliminary amendments.

Applicants submit that the amendments to claim 6 set forth in the Preliminary Amendment filed on August 4, 2003 renders moot the outstanding objection to claim 6.

### **Rejections Under 35 U.S.C. § 103**

On page 2 of the Office Action, the PTO has rejected claims 1 and 4-6 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,153,008 to von Ammon *et al.* (hereafter “von Ammon”) in view of U.S. Patent 6,197,111 to Ferry (hereafter “Ferry”). In addition, on page 3 of the Office Action, the PTO has rejected claims 2 and 3 under 35 U.S.C. §103(a) as being unpatentable over von Ammon in view of Ferry. Applicants respectfully traverse these rejections for the reasons set forth below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants’ disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, Applicants submit that neither von Ammon nor Ferry, taken either individually or in combination, teach or properly suggest “a mounting part extending outward from an upper end of the main shield body, the mounting part comprises a ring shape, and a third curvature with a curved surface, which is formed between the main shield body and the mounting part, wherein each curved surface of the first, second and third curvatures is formed of a circular arc or an elliptic arc in cross section, and has a radius of curvature of 5 mm or more” as recited in amended claim 1.

In the last full paragraph on page 3 of the Office Action, the PTO correctly acknowledges that von Ammon and Ferry “differ from [claims 2 and 3] in the curvatures.” In fact, neither von Ammon nor Ferry make any mention of the curvatures discussed in the present application. This fact is not surprising inasmuch as both of these references address a different problem than the problem addressed in the present application.

In contrast to von Ammon and Ferry, which each focus on minimizing defects in single crystals caused by temperature gradients, the presently claimed invention provides a solution to the problems caused by cracking in a coating on a radiation shield in an apparatus

for pulling a single crystal. The cracking may, *inter alia*, introduce particles into the melt from which the single crystal is formed and thereby introduce impurities into the single crystal. Thus, the presently claimed invention provides a solution to a different problem than that addressed by the von Ammon and Ferry references.

Applicants acknowledge, the PTO's statement, in the last full paragraph on page 3 of the Office Action, that "in the absence of unexpected results, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum, operable curvatures in the von Ammon reference in order to lessen turbulent flow of the inert gases caused by rough edges." However, Applicants submit that this statement (1) improperly attempts to shift the PTO's burden of establishing a *prima facie* case of obviousness to Applicants by requiring Applicants to establish the non-obviousness of their invention when the PTO has failed to cite a single reference to support its position, (2) fails to establish a factual basis, *e.g.* by citing a reference, that would suggest the desirability of optimizing curvatures on a radiation shield, (3) fails to establish that any optimization would result in curved surfaces "formed of a circular arc or an elliptic arc in cross section, and has a radius of curvature of 5 mm or more," (4) fails to establish that the claimed combination of features would have been obvious and (5), even if the statement were proper, fails to provide any statement address the data presented in the comparative showing in the specification.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under §103.

### **Newly Added Claims**

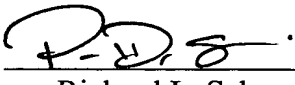
In this response, Applicants have added claims 13-19. Applicants note that neither von Ammon nor Ferry, taken either individually or in combination, teach or suggest "a first curvature formed between the main shield body and the horizontal part; and a second curvature formed between the horizontal part and the rising part; wherein each of the first curvature and the second curvature is formed of an arc (i) comprising a circular or elliptic cross section and (ii) comprising a radius of curvature of 5 mm or more" as recited in claim 13. Accordingly, Applicants submit that claim 13 and claims 14-19, which depend therefrom, are allowable over the cited combination of references.

**CONCLUSION**

In view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the Examiner is invited to contact the undersigned at the number below.

Respectfully submitted,

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The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

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